

# PATENT COOPERATION TREATY

## PCT

REC'D 29 NOV 2000

WIPO PCT

### INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

|  |   |  |
|--|---|--|
| Applicant's or agent's file reference<br>3206-176/PAR                                      | <b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) |  |
| International application No.<br>PCT/CA00/00266  | International filing date (day/month/year)<br>13/03/2000  | Priority date (day/month/year)<br>12/03/1999 |
| International Patent Classification (IPC) or national classification and IPC<br>C07C323/60 |   |  |
| Applicant<br>HSC RESEARCH AND DEVELOPMENT LIMITED PARTNERSHIP                              |   |  |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.


2. This REPORT consists of a total of 4 sheets, including this cover sheet.

- ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

|   |  |
|---|--|
| Date of submission of the demand<br>11/10/2000  | Date of completion of this report<br>27.11.2000                        |
| Name and mailing address of the international preliminary examining authority:<br> European Patent Office<br>D-80298 Munich<br>Tel. +49 89 2399 - 0 Tx: 523656 epmu d<br>Fax: +49 89 2399 - 4465 | Authorized officer<br><br>Sen, A<br><br>Telephone No. +49 89 2399 8328 |



# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/CA00/00266

## I. Basis of the report

1. This report has been drawn on the basis of *(substitute sheets which have been furnished to the receiving Office response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments (Rules 70.16 and 70.17).):*

### Description, pages:

1-15 as originally filed

### Claims, No.:

1-37 as originally filed

### Drawings, sheets:

1-17 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/CA00/00266

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

|                               |      |        |      |
|-------------------------------|------|--------|------|
| Novelty (N)                   | Yes: | Claims | 1-37 |
|                               | No:  | Claims |      |
| Inventive step (IS)           | Yes: | Claims | 1-37 |
|                               | No:  | Claims |      |
| Industrial applicability (IA) | Yes: | Claims | 1-37 |
|                               | No:  | Claims |      |

**2. Citations and explanations  
see separate sheet**

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/CA00/00266

D1: US-A-5 773 476

D2: WO 94 26260 A

D3: JOURNAL OF MEDICINAL CHEMISTRY, vol. 34, (1991), pages 1896-1907

**SECTION V:**

The subject-matter of the application relates to benzylidene malononitrile compounds of general formula I which are described in connection with "an unexpectedly improved efficacy for treatment of cell proliferative diseases", see page 4, lines 6-9. Accordingly, it is shown that the compounds described give complete suppression of proliferation of human acute lymphoblastic leukemia cells without significantly affecting normal bone marrow cells, see page 12, Example 2 to page 15, Example 6; and see also the Figures, e.g. Figure 7/17 or Figure 17/17.

Document D1 cited on page 1, describes a number of benzylidene malononitrile derivatives which however differ from the present compounds with regard to the substitution on the phenyl ring: in D1 a 3', 5'-tert.-butyl-4'-OH- substitution, whereas in the present application a 3'-OR<sub>1</sub>-4'-OH-5'-methylene-SR<sub>2</sub> substitution.

Similar differences in the definition of the substituents on the phenyl ring are found in D2, which describes a simple 3',4'-dihydroxy substitution on the phenyl ring, and in D3, see page 7, lines 11-18. Moreover the compounds of D3 differ in the length and substitution of the side chain: in D3  $-C(R_{11})=C(CN)R_{12}$ , whereas in the present application  $-CH=C(CN)-C(=O)-NH-CHR_3R_4$ .


For the assessment of the present claims 23-37 on the question whether they are industrially applicable, no unified criteria exist in the PCT. The patentability can also be dependent upon the formulation of the claims. The EPO, for example, does not recognize as industrially applicable the subject-matter of claims to the use of a compound in medical treatment, but may allow, however, claims to a known compound for first use in medical treatment and the use of such a compound for the manufacture of a medicament for a new medical treatment.

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

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| Applicant's or agent's file reference<br>3206-176/PAR  |  | <b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) |  |
| International application No.<br>PCT/CA00/00266  | International filing date (day/month/year)<br>13/03/2000 | Priority date (day/month/year)<br>12/03/1999  |  |
| International Patent Classification (IPC) or national classification and IPC<br>C07C323/60   |  |   |  |
| Applicant<br>HSC RESEARCH AND DEVELOPMENT LIMITED PARTNERSHIP  |  |   |  |
| <p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 4 sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of sheets.</p>  |  |   |  |
| <p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <li>I <input checked="" type="checkbox"/> Basis of the report</li> <li>II <input type="checkbox"/> Priority</li> <li>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</li> <li>IV <input type="checkbox"/> Lack of unity of invention</li> <li>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li> <li>VI <input type="checkbox"/> Certain documents cited</li> <li>VII <input type="checkbox"/> Certain defects in the international application</li> <li>VIII <input type="checkbox"/> Certain observations on the international application</li> </ul> |  |   |  |
| Date of submission of the demand<br>11/10/2000   |  | Date of completion of this report<br>27.11.2000   |  |
| Name and mailing address of the international preliminary examining authority:<br> European Patent Office<br>D-80298 Munich<br>Tel. +49 89 2399 - 0 Tx: 523656 epmu d<br>Fax: +49 89 2399 - 4465  |  | Authorized officer<br><br>Sen, A<br><br>Telephone No. +49 89 2399 8328  |  |





**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/CA00/00266

**I. Basis of the report**

1. This report has been drawn on the basis of *(substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments (Rules 70.16 and 70.17).):*

**Description, pages:**

1-15 as originally filed

**Claims, No.:**

1-37 as originally filed

**Drawings, sheets:**

1-17 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).  
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☐ filed together with the international application in computer readable form.  
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☐ furnished subsequently to this Authority in computer readable form.  
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.  
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4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:  
☐ the claims, Nos.:





**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/CA00/00266

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

|                               |      |        |      |
|-------------------------------|------|--------|------|
| Novelty (N)                   | Yes: | Claims | 1-37 |
|                               | No:  | Claims |      |
| Inventive step (IS)           | Yes: | Claims | 1-37 |
|                               | No:  | Claims |      |
| Industrial applicability (IA) | Yes: | Claims | 1-37 |
|                               | No:  | Claims |      |

2. Citations and explanations  
**see separate sheet**



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/CA00/00266

D1: US-A-5 773 476

D2: WO 94 26260 A

D3: JOURNAL OF MEDICINAL CHEMISTRY, vol. 34, (1991), pages 1896-1907

**SECTION V:**

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For the assessment of the present claims 23-37 on the question whether they are industrially applicable, no unified criteria exist in the PCT. The patentability can also be dependent upon the formulation of the claims. The EPO, for example, does not recognize as industrially applicable the subject-matter of claims to the use of a compound in medical treatment, but may allow, however, claims to a known compound for first use in medical treatment and the use of such a compound for the manufacture of a medicament for a new medical treatment.



# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

|  |   |  |
|--|---|--|
| Applicant's or agent's file reference<br><b>3206-176/PAR</b> | <b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below. |  |
| International application No.<br><b>PCT/CA 00/ 00266</b>     | International filing date (day/month/year)<br><b>13/03/2000</b>   | (Earliest) Priority Date (day/month/year)<br><b>12/03/1999</b> |

Applicant

**HSC RESEARCH AND DEVELOPMENT LIMITED PARTNERSHIP**

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 4 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the report**

a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☒ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (see Box II).

4. With regard to the title,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

1  
☐ None of the figures.



## INTERNATIONAL SEARCH REPORT

International Application No

PC A 00/00266

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C07C323/60 C07D277/74 A61K31/277 A61K31/428 A61P35/02

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C07C C07D A61K A61P

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages   | Relevant to claim No. |
|------------|--|-----------------------|
| A          | US 5 773 476 A (A. GAZIT, ET AL.)<br>30 June 1998 (1998-06-30)<br>cited in the application<br>the whole document<br>---  | 1,12,23               |
| A          | A. GAZIT, ET AL.: "Tyrphostins. 2.<br>Heterocyclic and alpha-substituted<br>benzylidenemalonitrile tyrphostins as<br>potent inhibitors of EGF receptor and<br>ErbB2/neu tyrosine kinases"<br>JOURNAL OF MEDICINAL CHEMISTRY,<br>vol. 34, no. 6, 1 June 1991 (1991-06-01),<br>pages 1896-1907, XP000472938<br>American Chemical Society, Washington, DC,<br>US<br>ISSN: 0022-2623<br>table III<br>---<br>-/-- | 1,12,23               |

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

## \* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- "&" document member of the same patent family

Date of the actual completion of the international search

31 May 2000

Date of mailing of the international search report

13/06/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

English, R





# INTERNATIONAL SEARCH REPORT

International Application No

PCT/ISA 00/00266

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages                             | Relevant to claim No. |
|------------|--|-----------------------|
| A          | <p>WO 94 26260 A (YISSUM RESEARCH DEVELOPMENT) 24 November 1994 (1994-11-24)<br/>claims 1,2,4</p> <p>-----</p> | 1, 12, 23             |



# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/SA 00/00266

| Patent document<br>cited in search report |   | Publication<br>date | Patent family<br>member(s) | Publication<br>date |
|---|---|---------------------|----------------------------|---------------------|
| US 5773476                                | A | 30-06-1998          | US 5789427 A               | 04-08-1998          |
|   |   |                     | AU 2096895 A               | 25-09-1995          |
|   |   |                     | WO 9524190 A               | 14-09-1995          |
| WO 9426260                                | A | 24-11-1994          | AU 6910994 A               | 12-12-1994          |
|   |   |                     | ZA 9403305 A               | 30-01-1995          |



## PATENT COOPERATION TREATY

PCT

## NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner  
 US Department of Commerce  
 United States Patent and Trademark  
 Office, PCT  
 2011 South Clark Place Room  
 CP2/5C24  
 Arlington, VA 22202  
 ETATS-UNIS D'AMERIQUE  
 in its capacity as elected Office

|   |   |
|---|---|
| <b>Date of mailing (day/month/year)</b><br>07 November 2000 (07.11.00)        | <b>Applicant's or agent's file reference</b><br>3206-176/PAR      |
| <b>International application No.</b><br>PCT/CA00/00266                        | <b>Priority date (day/month/year)</b><br>12 March 1999 (12.03.99) |
| <b>International filing date (day/month/year)</b><br>13 March 2000 (13.03.00) |   |
| <b>Applicant</b><br>ROIFMAN, Chaim, M. et al                                  |   |

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:

11 October 2000 (11.10.00)

☐ in a notice effecting later election filed with the International Bureau on:2. The election ☒ was☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

|  |  |
|--|--|
| <b>The International Bureau of WIPO</b><br>34, chemin des Colombettes<br>1211 Geneva 20, Switzerland<br>Facsimile No.: (41-22) 740.14.35 | <b>Authorized officer</b><br>Charlotte ENGER<br>Telephone No.: (41-22) 338.83.38 |
|--|--|

